

METHOD AND SYSTEM FOR OPTICALLY TRACKING A TARGET USING
AN INTERFEROMETRIC TECHNIQUE

ABSTRACT OF THE INVENTION

5 An optical position-tracking system comprises an optical device for
generating an incident light beam and a reference light beam from a light
beam. Moreover, the optical position-tracking system further comprises a
light beam steering device for sweeping the incident light beam through an
angular range to cause a reflection of the incident light beam by a target,
whereas the reflection of the incident light beam is directed to interfere with
10 the reference light beam to form an interference light beam. Additionally, the
optical position-tracking system enables determination of a position of the
target using an interferometric technique utilizing an angular value of the
incident light beam and the interference light beam, whereas the angular
value depends on the reflection. If the light beam has a plurality of
15 wavelengths, either due to the existence of these wavelengths
simultaneously, or over a time interval having multiple wavelengths, the
absolute position of the target can be determined. If the light beam has a
single wavelength, the relative position of the target can be determined.